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Occurrence of *Trechiana* (Coleoptera, Trechinae)
in Northern Kyushu, Southwest Japan

With 5 Text-figures

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ABSTRACT A trechine beetle belonging to the genus *Trechiana* is reported for the first time from Kyushu, Southwest Japan. This new species is typically anophthalmic but ripicolous, and is unusually dark in coloration for an eyeless trechine. It is probably related to *T. pluto* S. Uéno, a large cave-dwelling species endemic to the Akiyoshi area, but is readily distinguished from the latter by its elongate body form, normally formed hind angles of pronotum, and the presence of peculiar copulatory piece in its male genitalia. The new name *T. nakaoi* is given to this remarkable trechine in honour of its discoverer.

The genus *Trechiana* is an assemblage of archaic species of trechine beetles. The majority of its known members are Japanese, though it is also recorded from northeastern Korea (Jeannel, 1939, pp. 87–89, 1962, p. 191—subgenus *Leptepaphiama* Jeannel) and the southwestern part of Sikhote-Alin (Birstein and Ljovuschkin, 1967, p. 1517; Birstein, 1970, p. 214). None of its cavernicolous forms have been met with in southern Korea, but certain epigeal forms may occur there. In Japan, the members of this genus are widely distributed in Honshu, and have also been known from the eastern part of Shikoku (Uéno, 1957, pp. 179–184) and the Yûbari-Hidaka mountains of Hokkaido (cf. Uéno, 1971). Occurrence of certain *Trechiana* in northern Kyushu was long anticipated, since that part of the westernmost main island of Japan is the western extension of the ancient Chûgoku mountains and since the Kwammon Straits that separate northern Kyushu from the western tip of Honshu at the present time are too narrow to have formed an effective barrier for the westward dispersal of ancestral *Trechiana*. However, the expectation was not readily fulfilled in spite of repeated investigations of caves lying in northern Kyushu.

In the early summer of 1969, Mr. Shinji Nakao unexpectedly collected a specimen of a blind trechine at the side of a narrow stream flowing down the low hill at the back of Kokura City. Visiting the same place again, he took two more speci-

mens of the same beetle in the following month. One of these three was later sent to Dr. Akinobu Habu for identification, who, finding it to be a *Trechiamma*, kindly placed it at the present writer's disposal for study. It was obvious at a glance that the beetle was a new species of long awaited *Trechiamma*. Unfortunately, however, the specimen was a female, on which the true affinity of the new species could not be ascertained with confidence. Upon an inquiry about the remaining material, it was found that only the first specimen of Mr. Nakao's collection was a male but that this specimen was not useful for satisfactory genitalic study because of its immaturity. It was therefore needed to make further collectings and to obtain mature males.

Accompanied by Mr. Nakao, the writer recently made a visit to the place where the *Trechiamma* under consideration was discovered. His effort was repaid with a good success. Three fully mature specimens, all males, were obtained after a careful search of several hours. To his great surprise, the trechine was not endogean in any respect, though it is typically anophthalmic. Like certain scotophilous bembidiines, it dwelt under fist-sized stones along the water edge of a narrow shaded stream. This seems to explain why the trechine is unusually dark in the colour of the body. At all events, this species is of deep interest from both the zoogeographic and ecological aspects, and seems to be worthy of prompt description.

Trechiamma (s. str.) *nakaoi* S. Uéno, sp. nov.

Length: 6.0–6.5 mm (from apical margin of clypeus to apices of elytra).

Darker in colour and slenderer in body form than any of the known anophthalmic species of the genus *Trechiamma*. Probably related to *T. pluto* S. Uéno (1958 a, p. 40, figs. 1–2) of the caves in the Akiyoshi area, with which it agrees in chaetotaxy and in the general shape of male genitalia. It is, however, greatly different from the Akiyoshi species in the elongate form of body, convex genae, ample pronotum with normally formed hind angles, and the presence of a peculiarly shaped copulatory piece. In facies, this new species is more closely similar to *T. yokoyamai* S. Uéno (1958 b, c), particularly to *T. y. rectus* S. Uéno (1958 c, pp. 187, 195, fig. 7) of Ja-no-ana Cave in the Shitsuki limestone area of central Chûgoku, but the latter is a microphthalmic species, in which the internal series of setiferous dorsal pores on elytra is always composed of larger number of pores than the external series (cf. Uéno, 1958 c, p. 197, table 1). Besides, there is a decisive difference in genitalic features between *T. nakaoi* and *T. yokoyamai*.

A large species of elongate body form, with slender appendages; anophthalmic; inner wings absent. Colour dark chestnut brown, shiny and iridescent, especially on elytra; palpi, apical half of antennae, and tarsi reddish brown; sternites sometimes lighter in colour than the rest of body.

Head rather small, subquadrate, and moderately depressed above, with deep

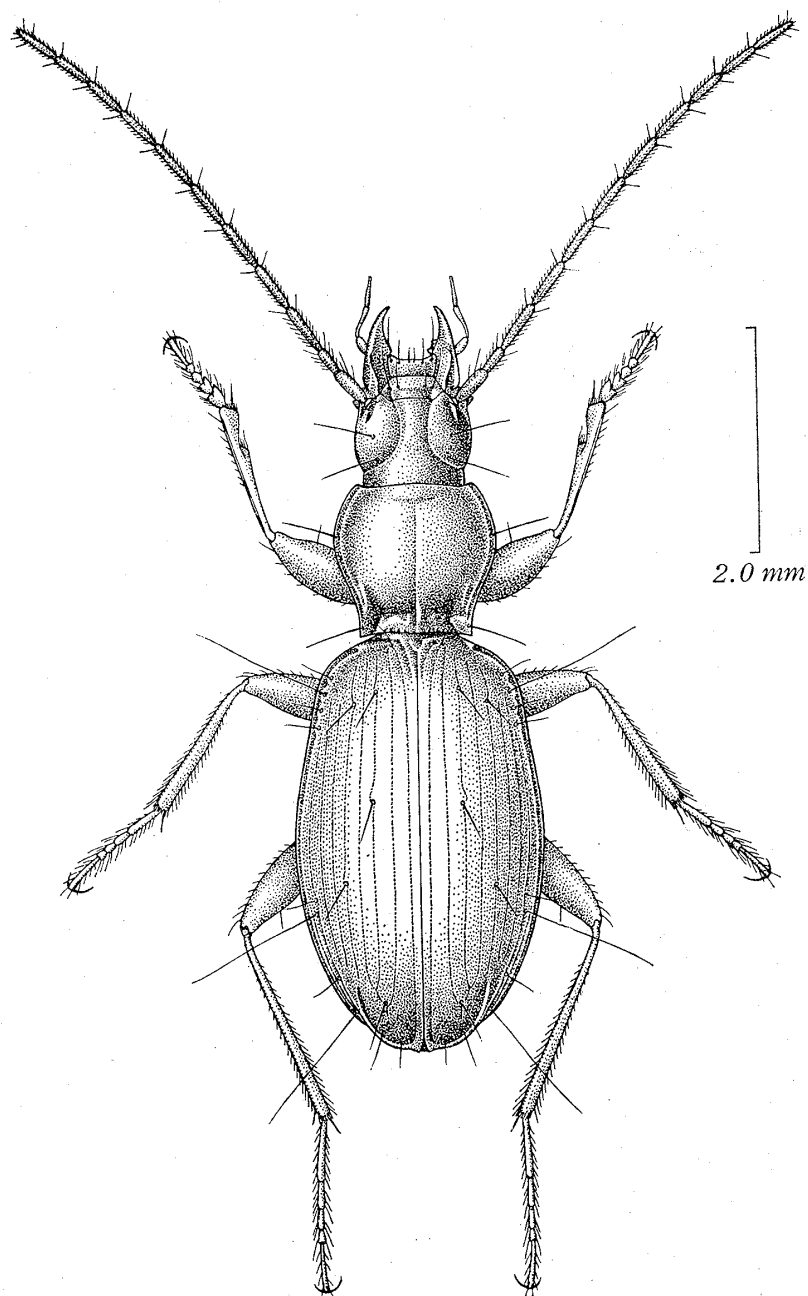


Fig. 1. *Trechiana* (s. str.) *nakaoi* S. Uéno, sp. nov., ♂, of Adachi-yama Hill in Kokura.

entire frontal furrows which are moderately divergent in front and behind and are not angulate at middle; frons and supraorbital areas gently convex; microsculpture distinct, consisting of fine transverse lines which partially form transverse meshes; eyes absent, the trace of them being present though sometimes very difficult to perceive; genae bare, gently and evenly convex; neck wide, with the anterior constriction shallow though distinct at the sides; labrum transverse, widely emarginate

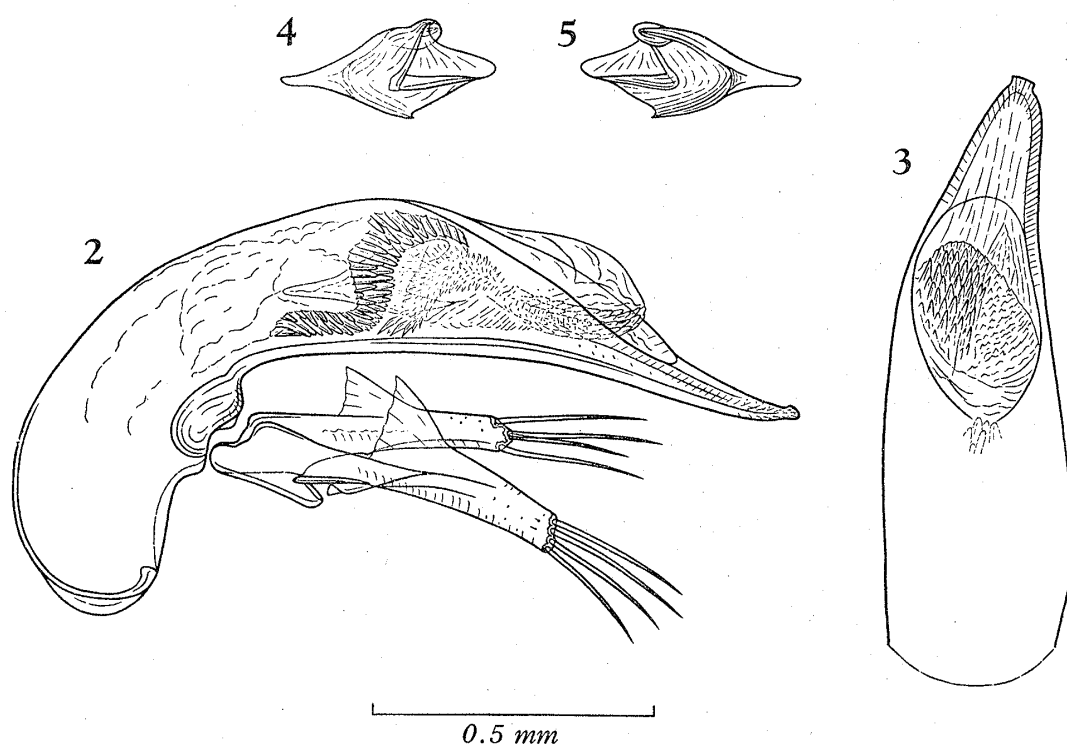
at apex; mandibles fairly slender; mentum tooth broad, more or less truncated or slightly emarginate at the tip; submentum sexsetose; palpi thin, with the penultimate segments gently dilated towards apices but not tumid in distal parts; antennae long and slender, reaching apical one-third of elytra in both ♂ and ♀, with segment 2 slightly more than a half as long as segment 3 which is slightly longer than segment 4; antennal segments 8–10 each about four times as long as wide, apical segment longer than segment 10 but shorter than segment 4.

Pronotum subcordate, more or less wider than long, widest at about five-eighths from base, and equally contracted in front and behind; ratio of the width of pronotum to that of head 1.40–1.45 (mean 1.43), that of the width to the length of pronotum 1.09–1.15 (mean 1.12); ratio of the greatest width of pronotum to the width of pronotal apex 1.51–1.60 (mean 1.56), that to the width of pronotal base 1.37–1.46 (mean 1.42); surface gently convex, with vague transverse striations; microsculpture composed of fine transverse lines though more or less obliterated; sides rather widely bordered throughout, widely rounded in front, distinctly sinuate at a level between basal one-ninth and one-seventh (usually at about one-eighth from base or a little behind that level), and then subparallel towards hind angles, which are more or less sharp but not acute; both lateral and postangular setae present, the latter being a little distant from the angle; apex always narrower than base, nearly straight or slightly arcuate, with front angles hardly advanced though distinct; base nearly straight or slightly bisinuate, the ratio of the width of base to that of apex being 1.05–1.12 (mean 1.10); median line deeply impressed on the disk and widening at the basal part; apical transverse impression shallow but more or less wrinkled; basal transverse impression deep though interrupted at middle, bearing a foveole on each side of median line and laterally merging into basal fovea, which is fairly large, deep, smooth at the bottom, and extends anteriorly; postangular carinae long and prominent; basal area longitudinally strigose.

Elytra oblong-ovate, widest at about middle; ratio of the width of elytra to that of pronotum 1.42–1.51 (mean 1.46), that of the length to the width of elytra 1.64–1.70 (mean 1.67); surface well convex, though somewhat depressed on the disk in basal one-third; microsculpture nearly obsolete though consisting of fine transverse lines; shoulders distinct though rounded; prehumeral borders fairly oblique, nearly straight or very slightly arcuate; sides rather narrowly reflexed throughout, nearly straight or slightly emarginate behind shoulders, feebly arcuate at middle, and then moderately rounded to apices through slight preapical emargination; apex obtusely angulate or even denticulate at suture, which forms a small re-entrant angle at apex; striae deep and entire, distinctly crenulate, becoming shallower towards the side though even stria 7 is moderately impressed throughout; scutellar striole distinct, fairly long; apical striole deep, rather short and gently curved, joining stria 5; intervals more or less convex on the disk, apical carina distinct; stria 3 normally with two setiferous dorsal pores at $1/11$ – $1/9$ and $1/3$ – $2/5$ from base respectively; in one of the male paratypes, there are three setiferous dorsal pores

on stria 3 of each elytron; preapical pore situated at the apical anastomosis of striae 2 and 3, obviously more distant from apex than from suture and a little closer to apical striole than to suture; stria 5 also with two setiferous dorsal pores at $1/8-1/6$ and $5/9-3/5$ from base respectively; marginal umbilicate pores perfectly aggregated.

Ventral surface glabrous and smooth; anal sexual setae normal. Legs slender; protibiae straight, deeply grooved on the external face and glabrous on the anterior face even at the apical part; tarsi long and slender, segment 4 with a long ventral apophysis in pro- and mesotarsi; protarsi in ♂ with two proximal segments widely dilated, each bearing stout internal process at apex and sexual adhesive appendages on the ventral side.



Figs. 2-5. *Trechiana* (s. str.) *nakaoi* S. Ueno, sp. nov., of Adachi-yama Hill in Kokura.
 —2. Male genitalia, left lateral view. —3. Apical part of aedeagus, dorsal view.
 —4. Separated copulatory piece, left lateral view. —5. The same, right lateral view.

Male genital organ fairly large and heavily sclerotized. Aedeagus about three-eighths as long as elytra, gradually attenuated from behind middle towards apex, with the dorsal side semicircularly rounded in profile; basal part elongate and well bent ventrad, with very narrow sagittal aileron; basal orifice not so large, shallowly emarginate at the sides; viewed laterally, apical lobe narrowly prolonged and slightly turned up near the extremity, which is somewhat tuberculate; viewed dorsally, apical lobe inclined to the left, fairly wide to near apex, and squarely tuberculate

at the extremity; ventral side nearly straight at middle and slightly emarginate before apex. Inner sac armed with a heavily sclerotized copulatory piece, which is situated at the right side near the middle of aedeagus, and also with three patches of sclerotized teeth, of which the proximal two are at the left side and the distal one at the right side of inner sac; copulatory piece fairly large, somewhat cupular and petiolate, with the concave side facing towards the right aedeagal wall; apical part of the piece bilobed, the ventral lobe being hyaline and larger than the dorsal, which is elliptically swollen; basalmost patch of teeth large and heavily sclerotized, being twisted from ventral to dorsal along the left wall of inner sac; middle patch also twisted along the left wall but largely composed of rather poorly sclerotized scales, only the ventralmost teeth being large and heavily sclerotized; apical patch longitudinal and simple. Styles rather small but fairly slender, left style being larger than the right, each provided with four fine setae at apex.

Type-series. Holotype: ♂ (27-IV-1972, S. Uéno leg.). Allotype: ♀ (13-VII-1969, S. Nakao leg.). Paratypes: 1 ♂ (26-VI-1969, S. Nakao leg.); 1 ♀ (13-VII-1969, S. Nakao leg.); 2 ♂♂ (27-IV-1972, S. Uéno leg.). A pair of the paratypes are preserved in Mr. Nakao's collection. All the others, including the holotype, are deposited in the collection of the National Science Museum, Tokyo.

Type-locality. Adachi-yama Hill, 120 m alt., in Kokura, at the southwestern end of the Kiku hills, Fukuoka Prefecture, in northern Kyushu, Japan.

Notes. As was noticed before, this remarkable new species may be closest to *T. pluto*. They are, however, not so close to each other as can be placed in the same species-group. A new group should be recognized for the present species mainly on account of the peculiarities in the shape of pronotal hind angles and in the structure of male genitalia.

All the six known specimens of *T. nakaoi* were found within a very limited place near the head of a narrow stream. Mr. Nakao and the present writer searched other habitats for the trechine in the spring of 1972, but failed in finding any of them. The forests that covered the hillside of Adachi-yama in former times have been largely cut over, so that there remain at present only a few exceptional spots which appear to be suitable for the existence of this hygrophilous blind species.

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